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ing of gamma radiation occurs when the recoil energy is completely absorbed by the entire crystals in which the emitting and absorbing nuclei are located. The effect is extremely sensitive; resonance absorption or scattering completely disappears with a change in energy of the gamma ray of only one part in a trillion (and in some cases even a thousand times less). Thus, the Mössbauer effect is a decisive indicator of any effect which changes the energy of absorption or emission nuclei. Among the possible pairs of emission and absorption nuclei the most studied and most promising for practical application are the radioactive iron nucleus Fe^{57*} (emitter),

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ACCESSION NR: AP5021136 UR/0056/65/049/002/0699/0706

AUTHORS: Bersuker, I. B.; Gol'danskiy, V. I.; Makarov, Ye. F.

TITLE: Analysis of the variation of the Sn^{119} nuclear charge radius based on its Mossbauer spectra

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 49, no. 2, 1965, 699-706

TOPIC TAGS: tin, tin compound, Mossbauer spectrum, crystal lattice structure

ABSTRACT: The authors present a more complete treatment of the distribution of the electron shells in compounds of tin, and its influence on the electron density at the nucleus. A general formula is derived for the dependence of the chemical shift on the parameters of the molecular orbitals in these compounds. From estimates of these parameters for the tetrahalogenides of tin it is concluded that the percentage change in the charge radius ($\Delta R/R$) of the excited nucleus is negative, in contrast with the previously obtained data by

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